

A NEW TROMBELLID MITE (ACARINA: TROMBELLIDAE) FROM SOUTH AUSTRALIA

by R. V. SOUTHCOTT*

Summary

SOUTHCOTT, R. V. (1991) A new trombellid mite (Acarina: Trombellidae) from South Australia. *Trans. R. Soc. S. Aust.* 115(4), 207-212, 29 November, 1991.

Austrotrombella leprosa gen. et sp. nov. is described, for the adult and deutonymph, from south-eastern South Australia; the new genus is monotypic. Revised definitions are given for *Parathrombella* André, 1958 and *Durenia* Vercammen-Grandjean, 1955. Two species placed by André in *Parathrombella* are here reclassified as *Durenia vilhenae* (André), comb. nov., and *D. gracilipalpe* (André), comb. nov.

KEY WORDS: Taxonomy, Acarina, Trombellidae, *Austrotrombella*, South Australia, adult, deutonymph, *Durenia*, *Parathrombella*.

Introduction

The mite family Trombellidae Thor, 1935, as restricted by Southcott (1986a, 1987), contains three genera known only as adults: *Parathrombella* André, 1958 (Africa), *Neonothrothrombidium* Robaux, 1968 (South America), and *Maiputrombella* Southcott, 1986a (South America). One genus, *Womersleyia* Radford, 1946 (Maldiv Islands, southern Asia) is known only from the larva. For *Trombella* Berlese, 1887 (Europe, Africa, Australia) the adult, larval and deutonymphal instars have been described (see Southcott 1986a, b). For *Durenia* Vercammen-Grandjean, 1955 (Africa, South America, south-eastern Asia) the same instars are known (Vercammen-Grandjean, 1955; Robaux, 1968; Vercammen-Grandjean & Audy, 1959). For *Nothrotrombidium* Womersley, 1954 (adult) (Europe, south-eastern Asia, North America) larvae have been described by Feider (1958) and Southcott (1987).

This paper records the discovery of a new genus and species of trombellid, for the adult and deutonymphal instars, from south-eastern South Australia, described here. In consequence generic concepts in the Trombellidae are re-examined, re-definitions offered for *Durenia* and *Parathrombella*, and the reclassification of two species of *Parathrombella* as *Durenia*.

Materials and Methods

Samples of wet soil with growing grasses and dicotyledonous herbs were collected from a site beneath a stand of *Leptospermum lanigerum* (Alton) Smith near Robe, South Australia, in March 1990. The site, near a swamp edge, had been studied for four years for life history studies of trombiculid mites. Samples weighing 5-6 kg were

placed in six large plastic pots and returned to Mitcham, S.A., where they were placed on a cement patio away from other vegetation and kept moist. At intervals of one month, half the contents of a pot were spread on a coarse wire mesh in a large Berlese funnel, and allowed to dry at ambient temperatures. The arthropod and other fauna were extracted live and examined daily. Among these were three adult and one deutonymphal trombellid mite, of a new genus and species. One adult (the holotype ♀) was alive and active, and an attempt to study its life history was made, by confining it in a tube with some of the site soil; however it died eight days later, without ovipositing. The other three specimens were found dead in the extraction jars, despite daily examinations.

The mites were cleared in 50% lactic acid and mounted in Hoyer's medium (Krantz, 1978). Fig. 1 was taken with a Leica M3 camera with bellows and ring extensions, with a 25 mm lens and flash illumination. All drawings were made with the aid of a camera lucida. All measurements are in micrometres (µm) unless otherwise specified. Setal and other terminology follows Southcott (1986a, b, 1987).

Material is deposited in the South Australian Museum, Adelaide (SAM).

Genus *Austrotrombella* gen. nov.

Definition: Adult: Dorsum of idiosoma with four longitudinal columns of almost contiguous depressions lined with basal plates, heavily sclerotized and sculptured with irregular pits, from rounded to oblong and polygonal, each plate with a smaller more or less central area of much smaller pits. Anteromedian plate single, transverse, with two sensillary pits, well-separated, in its posterior part, each bearing one fine sensillary seta. All dorsal idiosomal plates lack normal setae (scobalae).

* 2 Taylors Road, Mitcham, S. Aust. 5062.

Crista absent. Two sensory setae on each side, underneath anterior edge of anteromedian plate, the lateral ones resembling the prodorsal sensillary setae. In between the dorsal plates the integument carries simple chitinated structures ('cupolae'), each bearing one strong, simple, pointed seta. Ventral surface with coxae I and II, and III and IV of each side fused in a sclerotized plate; coxae bearing simple, pointed setae. Genital plate triangular, with several rounded pits at anterior and posterior ends of each lateral valve; setation of genital plate reduced. Legs with coarse setae, many robust, lanceolate. Hysterosoma with plates similar to dorsal, asetose, with cupolae on intervening integument.

Eyes apparently 2+2, with outer surfaces somewhat irregular.

Deutonymph: As for adult, but with genital plate reduced, each lateral valve with one large rounded pit at anterior and posterior ends.

Larva: not known.

Recognition: *Austrotrombella* may be separated from other adult (and deutonymphal) Trombellidae by replacing Caption 4 of Southcott (1986a, p. 164) with the following:

- 4 (3) Four depressions in lateral dorsal idiosomal column. *Parathrombella* André, 1958
 Five or six depressions in lateral dorsal idiosomal column. 4A
 4A (4) Five depressions in lateral dorsal idiosomal column; depressions without setae.
 *Austrotrombella* gen. nov.
 Six depressions in lateral dorsal idiosomal column; depressions with normal idiosomal setae (scobalae).
 *Trombella* Berlese, 1887.

***Austrotrombella leprosa* gen. et. sp. nov.**
 FIGS 1, 2, 3A-E, 4A-C

Holotype: ♀ SAM N1991112 (adult)

Paratypes: SAM N1991113, N1991114 (adults)

Description of adult (Figs 1, 2, 3A-E): Colour of idiosoma in life reddish brown dorsally, red ventrally, legs and palpi orange-red. Idiosoma oblong; in life 1220 long by 970 wide, total length to tip of chelicerae 1350; after mounting on slide idiosoma 1495 long by 1125 wide, total length 1855.

Details not covered in generic definition: Anteromedian plate transverse, 255 long by 364 wide, wider than two smaller plates immediately posterior; with a large central pit 28 long by 36 wide, lateral to which on each side a sensilligerous pit bearing a filiform seta 130 long; centres of sensilligerous pits 202 apart. Similar seta 145 long



Fig. 1. *Austrotrombella leprosa* gen. et sp. nov., adult, holotype, live, dorsal view, from a Kodachrome.

originates anterolaterally under anteromedian plate, and medial to this seta another seta 84 long; each seta arises from a small recessed pit. A series of narrow sculptured plates lies laterally along the idiosoma.

Ordinary setae (scobalae) absent from all dorsal and other idiosomal plates, but individual setae set in inter-plate integument, each arising from the summit of a strongly chitinated bell-shaped 'cupola' (see Figs 2, 3A).

Eyes 2+2, with irregular (i.e. non-spherical) external surfaces, set in small ocular plate underlying anteromedian and contiguous anterolateral dorsal plate; strong, pointed seta 102 long on adjacent cupola medial to eyes.

Ventral surface: coxal plates coarsely pitted, bearing simple pointed setae. Genital plate 336 long by 315 wide, each lateral valve bearing three rounded pits at anterior end and six at posterior end (paratype ACB1182 with 7-8 pits at posterior ends). Row of simple pointed setae, 34-50 long along medial edge of each valve, and few similar setae elsewhere on valves (see Fig 3B). No acetabula seen within genital aperture.

Anal plate roughly triangular, with rounded

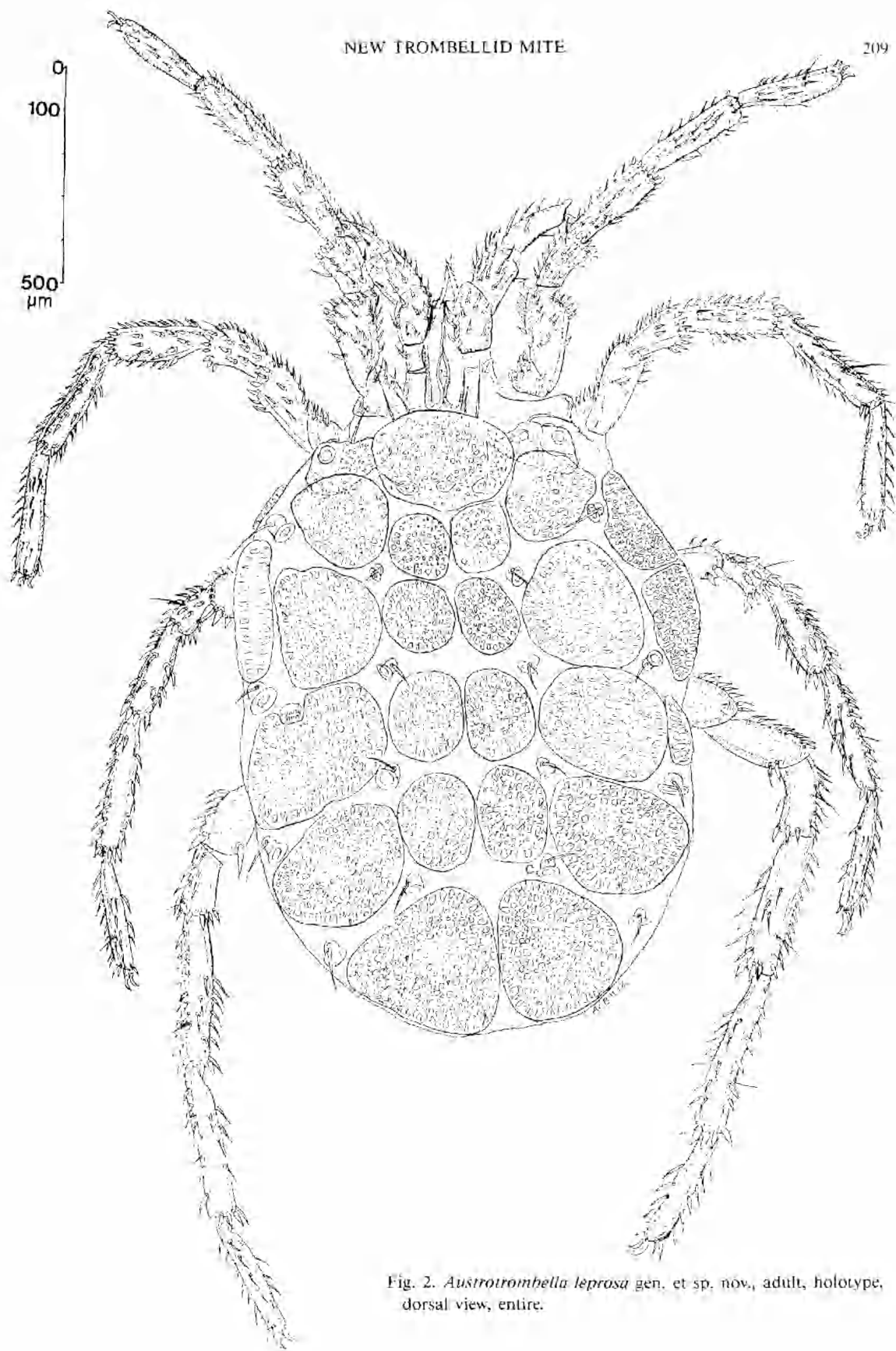


Fig. 2. *Austrotrombella leprasa* gen. et sp. nov., adult, holotype, dorsal view, entire.

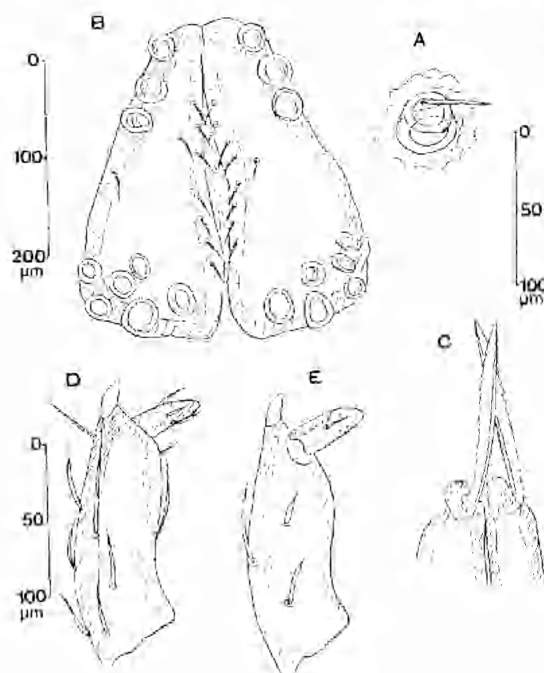


Fig. 3. *Austrotrombella leprosa* gen. et sp. nov., adult, holotype. A. Cupola, bearing seta ('c' in Fig. 1). B External genitalia. C Tip of chelicerae, dorsal. D Palp tibia and tarsus, dorsal. E Same, ventral. (Each to nearest scale).

angles; posterior angle obtuse; length 140, width 235; with pitting as for coxal and hysterosomal plates.

Hysterosoma with symmetrical plates similar to dorsal idiosomal plates, not seen clearly owing to thickness of preparations, but similar to those of deutonymph, *inf.*

Legs robust, lengths (including trochanter to tip of tarsal claws) I 1185, II 1255, III 1260, IV 1695. Legs well provided with coarse, pointed setae, mostly lanceolate to pointed-conical, generally simple, but some of the conical setae with fringing setules. Tarsi, particularly I, with reduced setation, setae mostly simple, lanceolate, pointed; few setae (also on tibiae) slender. Several minute solenoidalae on genua, tibiae and tarsi. Tarsal claws simple, falciform. Leg segmental measurements (genua-tarsi) as in Table 1.

Gnathosoma: cheliceral blades 125 long, pointed, straight, with 12-13 retrorse teeth, more outstanding peripherally. Palpi simplified, particularly tibia and tarsus; general setation similar to that of legs, much reduced on tibia and almost absent on tarsus; tibial claw strong, blunted.

Description of deutonymph (from paratype N1991115): (Fig. 4A-C).

Colour and general morphology similar to adult, but less heavily sclerotized. Idiosoma (mounted) 585 long by 405 wide; total length to tip of chelicerae 700. Anteromedian plate of dorsum 150 long by 270 wide, with its sensillary setae c. 60 long; centres of sensilla 132 apart.

Eyes apparently 2+2, abortive, corneal surfaces aspherical.

Ventral surface: coxal plates as for adult, with setation of simple pointed hairs, 27-70 long, as figured. External genitalia trapezoidal, 104 long by 86 wide where widest, toward posterior end (Fig. 4B); each valve with one large rounded pit at each (anterior and posterior) end; medial edges of valves with few simple pointed setae 25-36 long. Anal plate obscured in preparation. Hysterosoma with large, pitted plates as figured. Integument between plates with seta-bearing cupolae as figured.

Legs similar to those of adult; lengths (including trochanter to tip of tarsal claws) I 670, II 680, III 665, IV 850. Leg segmental measurements as in Table 1. Leg setation similar to adult.

Gnathosoma: cheliceral blades similar to adult, with c. 13 retrorse teeth. Palpi similar to adult but

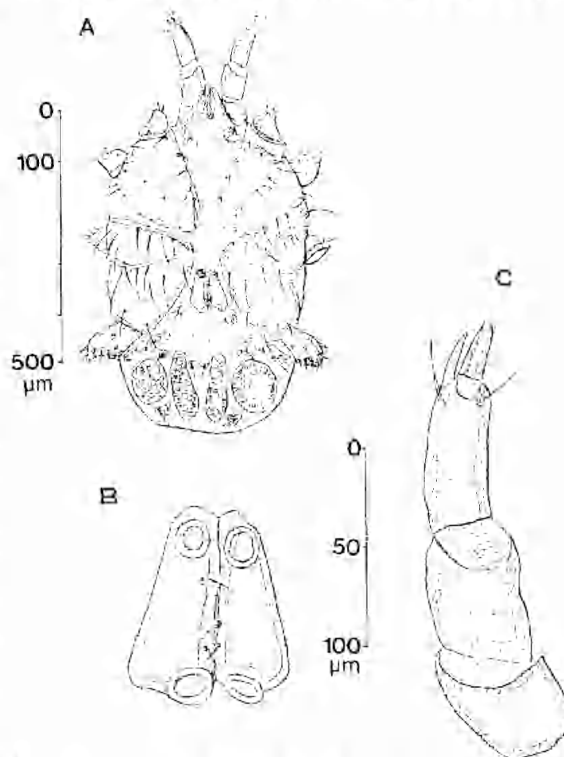


Fig. 4. *Austrotrombella leprosa* gen. et sp. nov., deutonymph, paratype. A Ventral view, legs omitted beyond trochanters. B External genitalia. C Palp, femur to tarsus, ventral. (Each to nearer scale).

TABLE 1. *Leg segmental measurements for Austrotrombella leprosa gen. et sp. nov. Data shown as mean \pm standard deviation, with the range in parentheses.*

	Holotype ACB1132 ♀	Adults n		Deutonymph Paratype ACB1216
GeI	235	3	238.7 \pm 22.72 (218-263)	125
TiI	277	3	277.0 \pm 25.00 (252-302)	153
TaI(L)	258	3	259.3 \pm 19.04 (241-279)	154
TaI(H)	67	3	64.3 \pm 7.37 (56-70)	36
TiI/GeI	1.18	3	1.163 \pm 0.0153 (1.15-1.18)	1.22
GeII	242	3	249.3 \pm 25.79 (228-278)	120
TiII	308	3	312.7 \pm 33.25 (282-348)	156
TaII(L)	283	3	291.0 \pm 14.73 (282-308)	168
TaII(H)	62	3	61.3 \pm 3.055 (58-64)	37
TiII/GeII	1.27	3	1.253 \pm 0.0153 (1.24-1.27)	1.30
GeIII	244	3	249.7 \pm 30.89 (222-283)	116
TiIII	319	3	328.3 \pm 39.83 (294-372)	160
TaIII(L)	288	3	294.3 \pm 27.06 (271-324)	165
TaIII(H)	48	3	48.7 \pm 7.02 (42-56)	31
TiIII/GeIII	1.31	3	1.313 \pm 0.00577 (1.31-1.32)	1.38
GeIV	382	3	390.3 \pm 56.96 (338-451)	174
TiIV	369	3	387.0 \pm 51.42 (347-445)	196
TaIV(L)	309	3	314.7 \pm 22.05 (296-339)	174
TaIV(H)	43	3	48.0 \pm 9.54 (42-59)	31
TiIV/GeIV	1.04	3	1.023 \pm 0.0208 (1.00-1.04)	1.13

less setose, e.g. palpal tibia with four pointed setae, palpal tarsus with about five flattened, simple setae.

Material examined: South Australia: Robe district, Map Reference (Penola 1: 250,000) 283411, in wet, alkaline, shellgrit - containing soil near swamp edge, under a stand of *Leptospermum lanigerum* (Aiton) Smith, collected 22.iii.1990, R. V. Southcott, and successively extracted by drying through Berlese funnels. Holotype SAM N1991112 (ACB 1132) obtained on 2.iv.1990 (adult); died 10.iv.1990. Paratype adults SAM N1991113, N1991114 (ACB 1152, ACB 1182) obtained dead on 5.v.1990 and 12.vi.1990 respectively. Paratype deutonymph SAM N1991115 (ACB 1216) obtained 7.xii.1990.

Etymology: *Austrotrombella* from 'australis' (southern) and 'Australia', and *Trombella*; *leprosa*

refers to the appearance in life, as though the dorsum is covered with ulcers.

Remarks on taxonomy: *Austrotrombella* is very distinct from its nearest genera (see the rubrics above). The palp is more obsolete than that in any other described trombellid.

Remarks on biology: All specimens came from wet soil. Although the extraction jars were examined daily, only the holotype adult was obtained alive. Evidently this species is sensitive to desiccation.

Comment on classification of Trombellidae

André (1958) described *Parathrombella* with type species *P. nasuta* André, 1958, and (*l.c.*) two other

species from Angola, *P. vilhenae* and *P. gracilipalpe*. From André's descriptions it is clear that the latter two species lack the dorsal plates present in *P. nasuta*, and bear dorsally and anterolaterally on the idiosoma the two small pits which Vercammen-Grandjean (1955) recorded in *Durenia* Vercammen-Grandjean, 1955; they also have similar leg structure to that of *D. hukavuensis* Vercammen-Grandjean, 1955 (Africa) and *D. glandulosa* Robaux, 1968 (South America). These two species of André are here reclassified as *Durenia vilhenae* (André), comb. nov., and *D. gracilipalpe* (André), comb. nov.

The following revised generic definitions are offered:

Durenia Vercammen-Grandjean, 1955

Definition: Adult: Trombellidae. Eyes 2+2. Dorsum of idiosoma with two small anterolateral pits, but lacking columns of depressions or depilate areas. Larva: Trombellidae. Eyes 2+2. Pedocoxal setal formula 2, 1, 1. Pedotarsal claws 1, 1, 2. Nasus of dorsal scutum large, triangular, its lateral border continuous with anterolateral border of scutum, with at most only small constriction. Leg tibia III without a large solenoidala.

Type species: *Durenia hukavuensis* Vercammen-Grandjean, 1955.

Remarks: *Durenia* is at present known for three African and one South American species in post-larval instars, and (as a larva only) for *D. singaporensis* Vercammen-Grandjean & Audy, 1959 (south-eastern Asia). Larva to deutonymph correlation was established by Vercammen-Grandjean (1955) with the type species.

Parathrombella André, 1958

Definition: Adult: Trombellidae. Eyes 1+1. Dorsum of idiosoma with three longitudinal columns of depilate depressions, four in each lateral column. Larva: Not known.

Remarks: At present restricted to the type species *P. nasuta* André, from Angola.

Acknowledgments

I thank Messrs P. R. and J. Enright, of 'Hermitage' property, for access to the collecting area, and Dr R. N. McCulloch for field assistance.

I am indebted to Dr J. P. Jessop, State Herbarium of South Australia, for plant identifications. The work was supported by the Australian Biological Resources Study.

References

- ANDRÉ, M. (1958) Acariens thrombidions (adultes) de l'Angola. *Publ. cult. Diamang*, No. 35, 1-125.
- BIRULE, A. (1887) *Trombella glandulosa* Berl. n. sp. (et genus) (with plate). *Acari, Myriapoda et Pseudoscorpiones hucusque in Italia reperta*. Number 40, Pt. 2 (Vol. IV). (A. Berlese, Patavii).
- FEIFFER, Z. (1958) Prima larvă din familia Trombellidae (Acarina) obținută prin cultură și despre noua caracterizare a familiei. *Acad. R. P. R. Fil. Iasi, Stud. Cerc. Ști. Biol. Ști. Agric.* 9(2), 265-282.
- KRANTZ, G. W. (1978) "A manual of acarology, 2nd edn." (Oregon State University Book Stores, Corvallis, Oregon).
- RADFORD, C. D. (1946) Larval and nymphal mites (Acarina: Trombellidae) from Ceylon and the Maldives Islands. *Parasitology* 37(1,2), 46-54.
- ROBAUX, P. (1968) Thrombidiidae d'Amérique du Sud. I - Tanaupodinae, Johnstonianinae, Trombellini (Acarina - Thrombidiidae). *Acarologia* 10(3), 450-466.
- SOUTHCOTT, R. V. (1986a) On *Trombicula alpha* n. sp. (Acarina: Trombellidae) from Australia: correlation, description, developmental abnormalities, systematics and possible auditory structures. *Rec. S. Aust. Mus.* 19(1), 145-168.
- (1986b) Australian larvae of the genus *Trombella* (Acarina: Trombidiidae). *Aust. J. Zool.* 34(4), 611-646.
- (1987) The classification of the mite families Trombellidae and Johnstonianidae and related groups, with the description of a new larva (Acarina: Trombellidae: *Nothrotrombidium*) from North America. *Trans. R. Soc. S. Aust.* 111(1), 25-42.
- THOR, S. (1935) Übersicht und Einteilung der Familie Trombellidae W. E. Leach 1814 in Unterfamilien. *Zool. Anz.* 109(5-6), 107-112.
- VERCAMMEN-GRANDJEAN, P. H. (1955) Un genre nouveau: *Durenia*, dans la sous-famille des Trombellinae. *Rev. Zool. Bot. Afr.* 52(3-4), 252-260.
- & AUDY, J. R. (1959) Une seconde espèce appartenant au genre *Durenia* Vercammen 1955 et originaire de Malaisie: *Durenia singaporensis* n. sp. (Acarina: Trombellidae). *Biologisch Jaarb. (Dodonaau), Ghent* 27, 98-101.
- WOMERSLEY, H. (1954) On the subfamily Trombellinae Sig Thor 1935 (Acarina, Trombellidae) with the diagnosis of the nymph of *Audyna thompsoni* Womersley, 1954. *Rec. S. Aust. Mus.* 11(2), 121-128.